

WHAT IS CLAIMED IS:

1. A wireless communication system comprising:

a number of sensors each having an antenna and being located on or within an element, each of said sensors being adaptable to detect a respective predetermined characteristic of said element; and

control transceiver means, operable to communicate in a wireless manner with said sensors, for supplying power to a desired number of said sensors so as to activate each respective antenna thereof and enable the desired sensor or sensors to detect the respective predetermined characteristic and to transmit an output signal indicative of the detected respective characteristic to said control transceiver.

2. A wireless communication system as in claim 1, wherein each said sensor includes only passive electronic devices.

3. A wireless communication system as in claim 1, wherein each said sensor includes a substrate portion having non-linear material characteristics.

4. A wireless communication system as in claim 3, wherein said substrate portion is a piezoelectric ceramic material.

5. A wireless communication system as in claim 3, wherein the desired sensor or sensors modulate the power signal and the output signal indicative of the detected respective characteristic and transmits the modulated signal to said control transceiver.

6. A wireless communication system as in claim 1,
wherein the predetermined characteristics include one of strain,
acceleration, deformation, and pressure.

7. A wireless communication system as in claim 1,
5 wherein said control transceiver means communicates with said
sensors over a microwave frequency range.

8. A wireless communication system comprising:

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10 a number of actuators each including an antenna and being
located on or within an element and being adaptable for causing
said element to deform in a desired manner when actuated; and

15 control transceiver means, operable to communicate in a
wireless manner with said actuators, for supplying power to a
desired number of said actuators so as to activate each respective
antenna thereof and enable said respective number of actuators to
achieve the desired deformation.

9. A wireless communication system as in claim 8,
wherein each said actuator includes only passive electronic
devices.

20 10. A wireless communication system as in claim 8,
wherein each said actuator includes a substrate portion having non-
linear material characteristics.

11. A wireless communication system as in claim 10,
wherein said substrate portion is a piezoelectric ceramic material.

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